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INTERNATIONAL APPLICATION NO.

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Parallel Rule
TITLE OF INVENTION

Humphries, Michael
APPLICANT(S)

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Commissioner of Patents and Trademarks
Washington, D.C. 20231
ATTENTION: EO/US

Filing Under 35 U.S.C. 371

Applicant herewith requests entry into the National Phase the above-identified international application which has been transmitted to the U.S.P.T.O. by the International Bureau (form PCT/1B/308, 08.03.01).

Enclosed is the U.S. National fee (plus assignment fee, if checked below) of \$ 445.00 (check # 1269). Small Entity EPO search

The following items are also enclosed (if checked):

1. ☒ Preliminary Amendment
2. ☐ Declaration and Power of Attorney
3. ☒ Small Entity Declaration (claimed)
4. ☐ Assignment (\$40.00 included in the above fee payment)

~~Information Report~~

Michael Y Epstein
SIGNATURE OF ATTORNEY

Reg. No. 21186

Michael Y. Epstein

Type or print name of attorney.

Tel. No. (843) 534-0840

359 Griggstown Rd.
P.O. Address

387 King St., Ste H
Belle Mead, NJ 08502
Charleston, S.C. 29403

CERTIFICATE OF MAILING (37 CFR 1.10)

I hereby certify that this Transmittal Letter and the papers indicated as being transmitted therewith is being deposited with the United States Postal Service on this date March 1, 02 in an envelope as "Express Mail Post Office to Addressee" Mailing Label Number EH28541717045 addressed to the : Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Michael Y. Epstein

(Type or print name of person mailing paper)

Michael Y Epstein

(Signature of person mailing paper)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Humphries, M.
Serial No. : PCT/GB00/03357
Inter. Filing Date : 1 Sept. 2000
For : PARALLEL RULE

AMENDMENT (*Preliminary*)

Commissioner of Patents and Trademarks
Washington, D.C. 20231

Dear Sir:

Kindly amend the claims of the above-identified PCT application, herewith being simultaneously entered into the National Phase under 35 U.S.C. 371, as follows:

Cancel claims 3 - 9 and 13 and rewrite them respectively as follows:

-- 15. A parallel rule as claimed in claim 1, the linkage comprises an intermediate member connected to each component rule by a respective set of three links, two links in each set being pivotally connected to both the intermediate member and the component rule by pivots situated on corners of a variable parallelogram, the other link in each set being pivotally connected to the component rule and both pivotally and slidably connected to the intermediate member for sliding movement together, parallel to the straight edges.

16. A parallel rule as claimed in claim 1, wherein the linkage comprises two links each pivotally connected to a respective component rule, each pivotally and slidably connected to the other

component rule for sliding movement parallel to its straight edge and pivotally connected together between the component rules.

17. A parallel rule as claimed in claim 1, contained by a package, the package being so formed that at least part of the parallel rule is visible therethrough, and so that the component rules may be opened and closed.

18. A parallel rule as claimed in claim 17, wherein the package has an opening through which one of the component rules may be accessed, to open and close the component rules, whilst retaining the parallel rule in the package.

18. A parallel rule as claimed in claim 17, wherein the package has an opening through which one of the component rules may be accessed, to open and close the component rules, whilst retaining the parallel rule in the package.

19. A parallel rule as claimed in claim 18, wherein each component rule is provided with a handle, and wherein the package is so formed as to restrain movement of one handle, the other handle projecting through the opening.

20. A parallel rule as claimed in claim 17, wherein the package is at least partly transparent.

21. A parallel rule as claimed in claim 1, wherein both component rules are provided on their undersides with a pair of spaced bosses, the bosses being of relatively low friction material, and between the bosses with at least one area of relatively high friction material, the bosses projecting further from the component rules than the high friction areas.

22. A parallel rule as claimed in claim 10, wherein the package is at least partly transparent. - -

Respectfully submitted,

Michael Y. Epstein
Michael Y. Epstein
Attorney for Applicant
Reg. No. 21186
843-534-0840

PARALLEL RULE

This invention relates to parallel rules.

Parallel rules are used for navigation purposes to transfer a direction from one position to another on a chart. Thus a direction may be taken from a compass rose marked on the chart and drawn through a particular position on the chart so as to indicate a course or a transit, for example. When using navigational aids such as sextants or electronic global positioning systems (GPS) it is also necessary to mark a position where a line of latitude intersects a line of longitude, so as to show the craft's position

Against this background, in accordance with one aspect of the invention, there is provided a parallel rule, comprising two component rules each providing one of two opposed parallel straight edges, and a linkage allowing relative movement of the rules in a direction orthogonal to the straight edges but prohibiting relative movement in a direction parallel to the straight edges, wherein at least one component rule has at least one through hole suitable to receive the point of a pencil.

Such a rule may be used conventionally to mark a line of longitude through a particular easting or westing by placing one straight edge parallel to a line of longitude shown on the chart and expanding the rule until one or other straight edge crosses the particular easting or westing indicated at the edge of the chart. The rule may then be used to mark a northing by placing an edge adjacent the northing scale at the edge of the chart, so that the or a hole is positioned at the required northing, placing the point of a pencil in the hole and expanding the rule to draw a line of latitude on the chart at the required northing. In the alternative the line of longitude could be drawn analogously

Most preferably, both component rules have through holes in corresponding positions. This allows one hole to be lined up with the appropriate northing and the pencil point to be inserted in the corresponding hole on the other component rule.

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In one form the linkage may comprise an intermediate member connected to each component rule by a respective set of three links, two links in each set being pivotally connected to both the intermediate member and the component rule by pivots situated on corners of a variable parallelogram, the other link in each set being pivotally
5 connected to the component rule and both pivotally and slidably connected to the intermediate member for sliding movement together, parallel to the straight edges.

In another form the linkage may comprise two links each pivotally connected to a respective component rule, each pivotally and slidably connected to the other component rule for sliding movement parallel to its straight edge and pivotally connected
10 together between the component rules.

Another aspect of the invention extends to a parallel rule, comprising two component rules each providing one of two opposed parallel straight edges, and a linkage allowing relative movement of the rules in a direction orthogonal to the straight edges but prohibiting relative movement in a direction parallel to the straight edges, the
15 parallel rule being contained by a package, the package being so formed that at least part of the parallel rule is visible therethrough, and so that the component rules may be opened and closed. This allows a prospective purchaser to operate the rule without removing it from its package.

In yet another aspect, the invention provides a parallel rule having two component
20 rules so linked as to constrain them to remain parallel, wherein both component rules are provided on their undersides with a pair of spaced bosses, the bosses being of relatively low friction material, and between the bosses with at least one area of relatively high friction material, the bosses projecting further from the component rules than the high friction areas. As the component rules will be inherently a little flexible, pressing a
25 component rule between the bosses, brings the relatively high friction material into contact with, say, a chart, firmly locating the rule thereon. Releasing the pressure raises the relatively high friction area from the chart so allowing the component rule to glide

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over the chart on the relatively low friction bosses. One component rule may thus be firmly located while the other is adjusted to its desired position.

Embodiments of the invention will now be described, by way of example, with reference to the accompanying drawings, in which:

5 Figure 1 is a plan view of a parallel rule embodying the invention, when closed,

Figure 2 is a cross sectional view of the rule of Figure 1;

Figure 3A is a plan view of the rule of Figure 1 shown in an open position;

Figure 3B is a pictorial detail of an alternative arrangement to that of Figure 1;

10 Figure 4 is a plan view of another parallel rule embodying the invention, shown in its closed position;

Figure 5 shows the parallel rule of Figure 4 in an open position;

Figure 6 is a pictorial view of the rule of Figure 1 in a package; and

Figure 7 is a side view of the parallel rules of Figures 1 to 5.

Referring to the drawings, the parallel rule 2 has two component rules 4 and 6.

15 Each component rule 4 or 6 has a straight bevelled edge 8 positioned so that the straight edges are opposed and on the outside of the parallel rule. The component rules 4 and 6 are connected by a linkage 10 which allows relative movement of the rules in a direction orthogonal to the straight edges but prohibits relative movement in a direction parallel to the straight edges.

20 In each component rule 4 and 6, behind and proximate each straight edge 8, in the bevel thereof, are conveniently positioned a plurality of through holes 12 suitable to receive the point of a pencil. The holes 12 have a diameter of from 0.5mm to 3mm diameter, preferably 2mm diameter, at the underside of the component rules. The holes are cylindrical for about 1mm and open out at an included angle of about 60° towards
25 the upper surface of the component rules where their diameters are about 4mm. The holes 12 are placed in corresponding positions along each straight edge. In use, for example, the straight edge 8 of component rule 4 is aligned with a line of longitude at the

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edge of a chart so that one of the holes 12 covers a desired mark on the northing scale. A pencil point is put in the corresponding hole 12 in the other component rule 6. Holding the component rule 4 still, the pencil and component rule 6 are moved to mark the chart with what is a line of latitude passing through the desired northing. The rule can be used conventionally or in a similar fashion to mark an intersecting line of longitude passing through a desired easting or westing, so marking a position at the desired latitude and longitude.

The linkage shown in the embodiment of Figures 1 to 3 has an intermediate member 14 positioned between the component rules 4 and 6. Each component rule is connected to the intermediate member 14 by a set of three linkages 16, 18 and 20 or 16', 18' and 20'. The linkages are connected to the component rule 4 or 6 and the intermediate member 14, by pivot pins 22. The pivot pins connecting the linkages 16 and 20 or 16' and 20' are arranged at the corners of a respective parallelogram so that the distance between the pivot pins of each link is the same as the other in the set. Links 16, 16', 20 and 20' are the same length as each other. Links 18 and 18' are the same length as each other and in this example as the links 16, 16', 20 and 20'. The pivot pins 22 are located in the same relative positions on the component rules 4 and 6. The pivot pins for the links 16, 16', 20 and 20' are located the same distance apart on the intermediate member 14, as on the component rules 4 and 6. Ignoring the links 18, 18' the component rules 4 and 6 can move relative to the intermediate member 14 whilst retaining the straight edges 8 parallel. The links 18 and 18' are connected to the intermediate member 14 by a common pivot pin 22 which is itself slidable in a slot 24, parallel with the straight edges, in the intermediate member 14. Such constraint of the links 18 and 18' to move together prevents the component rules 4 and 6 moving relatively in a longitudinal direction parallel to the straight edges 8 and confines relative movement to a direction normal to the straight edges.

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In an alternative arrangement, the links 18 and 18' are pivotally attached to a traveller 19 shown in Figure 3B. The traveller receives the intermediate member 14 along which it is arranged to slide.

Another linkage which achieves this effect is illustrated in Figure 4. Here the component rules 4 and 6 are connected by two links 26. Each link 26 is pivotally connected to a respective component rule 4 or 6 by one non-sliding pivot pin at 28. Each link is connected to the other respective component rule by another pivot pin 30 which is slidable in a slot 32 in the component rule. Each slot 32 is parallel with the relevant straight edge 8. The links 26 are joined between their ends by a further pivot pin 34 such that the distances between the pivot pin 34 and the pins 28 are the same as each other. The pivot pins 28 and the slots 32 are in the same relative positions on both component rules 4 and 6.

In order to facilitate the operation described above, each component rule 4 and 6 is provided with bosses 40 of relatively low friction material and at least one area 42 of relatively high friction material. The bosses 40 may be formed integrally of a plastics material, e.g. acrylic or polycarbonate, with the component rules 4 and 6. The bosses are spaced, being placed towards the ends of the component rules. The relatively high friction areas 42 may be provided, for example by a layer of silicone rubber. The bosses 40 project further from the undersides of the component rules than do the high friction areas. In use, to hold a component rule still, as described above, the component rule is pressed between its bosses so as to flex the component rule to bring the high friction areas to bear against the chart. Placing a pencil point in one of the holes 12 to draw the other component rule across the chart, as described above, does not flex the component rule, so allowing it to glide across the chart on the bosses 40.

In order to allow a prospective purchaser to see the operation of the parallel rule without the need to unpack it, a package 50 is provided as illustrated in Figure 6. The package has a card base 52 and a transparent cover 54. The base may be printed with

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a section of a real or fictitious chart. The package is wide enough to allow the component rules 4 and 6 to be parted and closed. The component rule 4 is provided with a handle 56. Similarly, the component rule 6 is provided with a handle 58. The handles 56 and 58 facilitate use of the rule as described on a chart. In the package, the

5 handle 56 extends into a closed recess 60 to restrain it from moving. The handle 58 extends through an opening 62 allowing it to be accessed from outside the cover 54 so as to separate or close the component rules while the parallel rule remains in the package.

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(62)

CLAIMS

1. A parallel rule, comprising two component rules each providing one of two opposed parallel straight edges, and a linkage allowing relative movement of the rules in a direction orthogonal to the straight edges but prohibiting relative movement in a direction parallel to the straight edges, wherein at least one component rule has at least one through hole suitable to receive the point of a pencil so as to make a line of latitude or longitude on a chart, in use.
2. A parallel rule as claimed in claim 1, wherein both component rules have through holes in corresponding positions.
3. A parallel rule as claimed in claim 1 or 2, the linkage comprises an intermediate member connected to each component rule by a respective set of three links, two links in each set being pivotally connected to both the intermediate member and the component rule by pivots situated on corners of a variable parallelogram, the other link in each set being pivotally connected to the component rule and both pivotally and slidably connected to the intermediate member for sliding movement together, parallel to the straight edges.
4. A parallel rule as claimed in claim 1 or 2, wherein the linkage comprises two links each pivotally connected to a respective component rule, each pivotally and slidably connected to the other component rule for sliding movement parallel to its straight edge and pivotally connected together between the component rules.
5. A parallel rule as claimed in any preceding claim, contained by a package, the package being so formed that at least part of the parallel rule is visible therethrough, and so that the component rules may be opened and closed.
6. A parallel rule as claimed in claim 5, wherein the package has an opening through which one of the component rules may be accessed, to open and close the component rules, whilst retaining the parallel rule in the package.

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7. A parallel rule as claimed in claim 6, wherein each component rule is provided with a handle, and wherein the package is so formed as to restrain movement of one handle, the other handle projecting through the opening.

8. A parallel rule as claimed in any of claims 5 to 7, wherein the package is
5 at least partly transparent.

9. A parallel rule as claimed in any preceding claim, wherein both component rules are provided on their undersides with a pair of spaced bosses, the bosses being of relatively low friction material, and between the bosses with at least one area of relatively high friction material, the bosses projecting further from the component
10 rules than the high friction areas.

10. A parallel rule, comprising two component rules each providing one of two opposed parallel straight edges, and a linkage allowing relative movement of the rules in a direction orthogonal to the straight edges but prohibiting relative movement in a direction parallel to the straight edges, the parallel rule being contained by a package,
15 the package being so formed that at least part of the parallel rule is visible therethrough, and so that the component rules may be opened and closed.

11 A parallel rule as claimed in claim 10, wherein the package has an opening through which one of the component rules may be accessed, to open and close the component rules, whilst retaining the parallel rule in the package.

20 12. A parallel rule as claimed in claim 11, wherein each component rule is provided with a handle, and wherein the package is so formed as to restrain movement of one handle, the other handle projecting through the opening.

13. A parallel rule as claimed in any of claims 10 to 12, wherein the package is at least partly transparent

25 14. A parallel rule having two component rules so linked as to constrain them to remain parallel, wherein both component rules are provided on their undersides with a pair of spaced bosses, the bosses being of relatively low friction material, and between

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the bosses with at least one area of relatively high friction material, the bosses projecting further from the component rails than the high friction areas.

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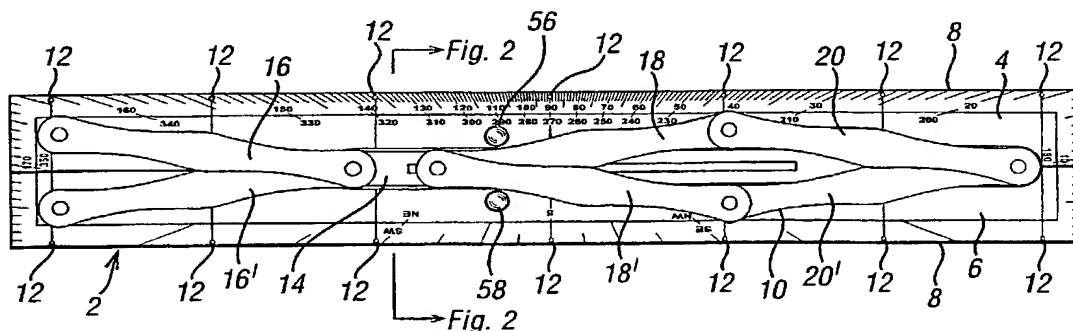
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9920664.1 1 September 1999 (01.09.1999) GB
- (71) Applicant (for all designated States except US): IDEAS WORKSHOP LTD. [GB/GB]; 54 Cookham Road, Maidenhead, Berks SL6 7HT (GB).
- (72) Inventor; and
- (75) Inventor/Applicant (for US only): HUMPHRIES, Michael [GB/GB]; Ideas Workshop Ltd., 54 Cookham Road, Maidenhead, Berks SL6 7HT (GB).
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- (74) Agent: WEITZEL, David, Stanley; Batchellor, Kirk & Co., 102-108 Clerkenwell Road, London EC1M 5SA (GB).
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(54) Title: PARALLEL RULE

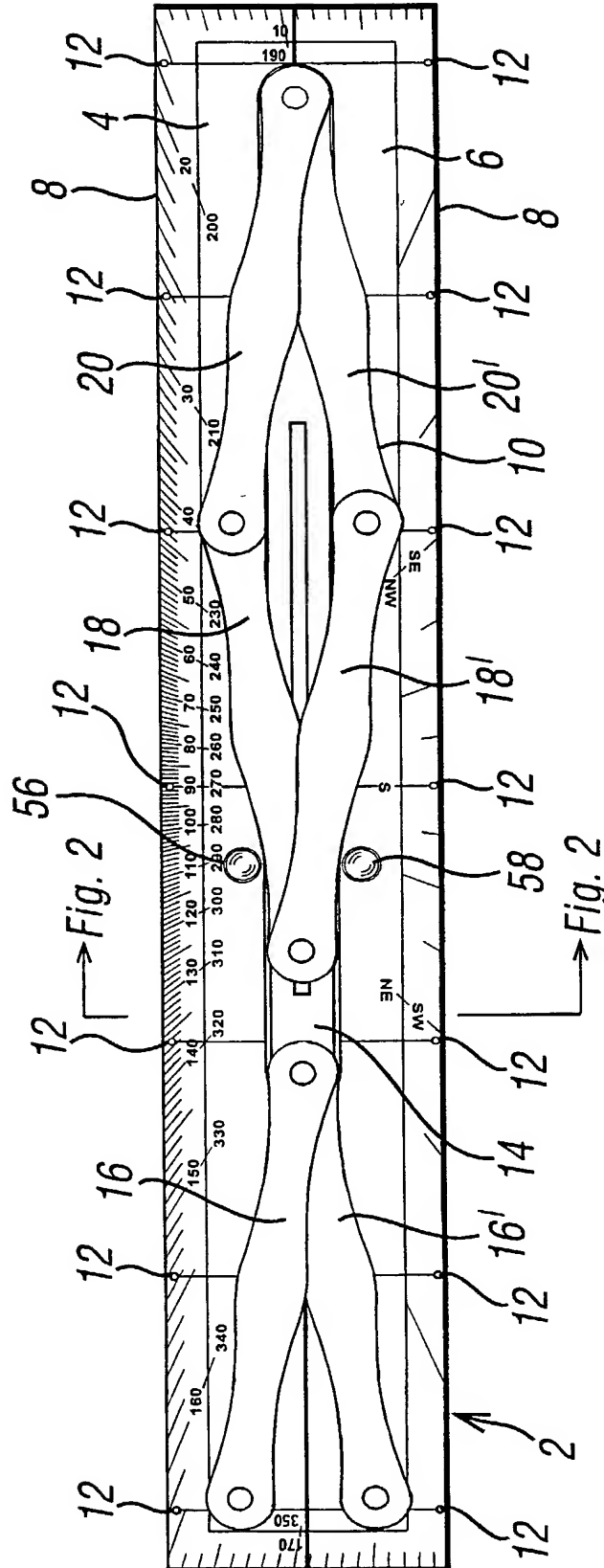


(57) Abstract: A parallel rule is disclosed having two component rules (4, 6) each providing one of two opposed parallel straight edges. A linkage (10) allows relative movement of the rules in a direction orthogonal to the straight edges but prohibits relative movement in a direction parallel to the straight edges. At least one component rule has at least one through hole (12) suitable to receive the point of a pencil.

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FIG. 1



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FIG. 2

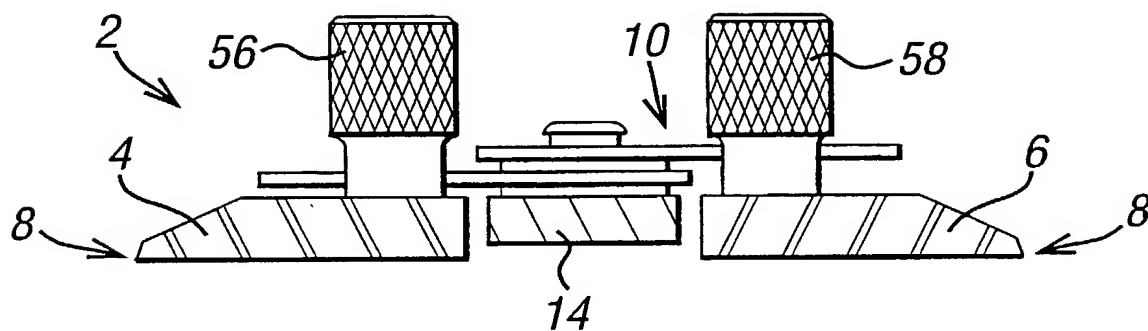
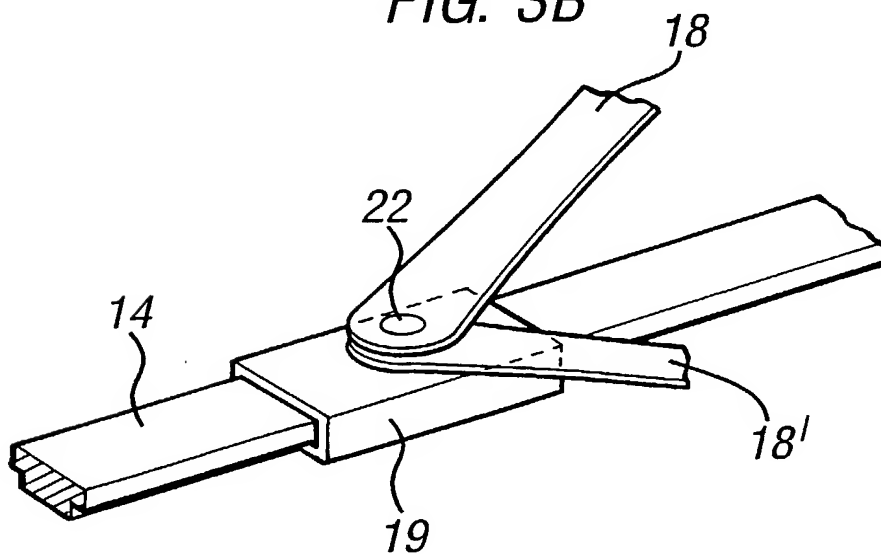
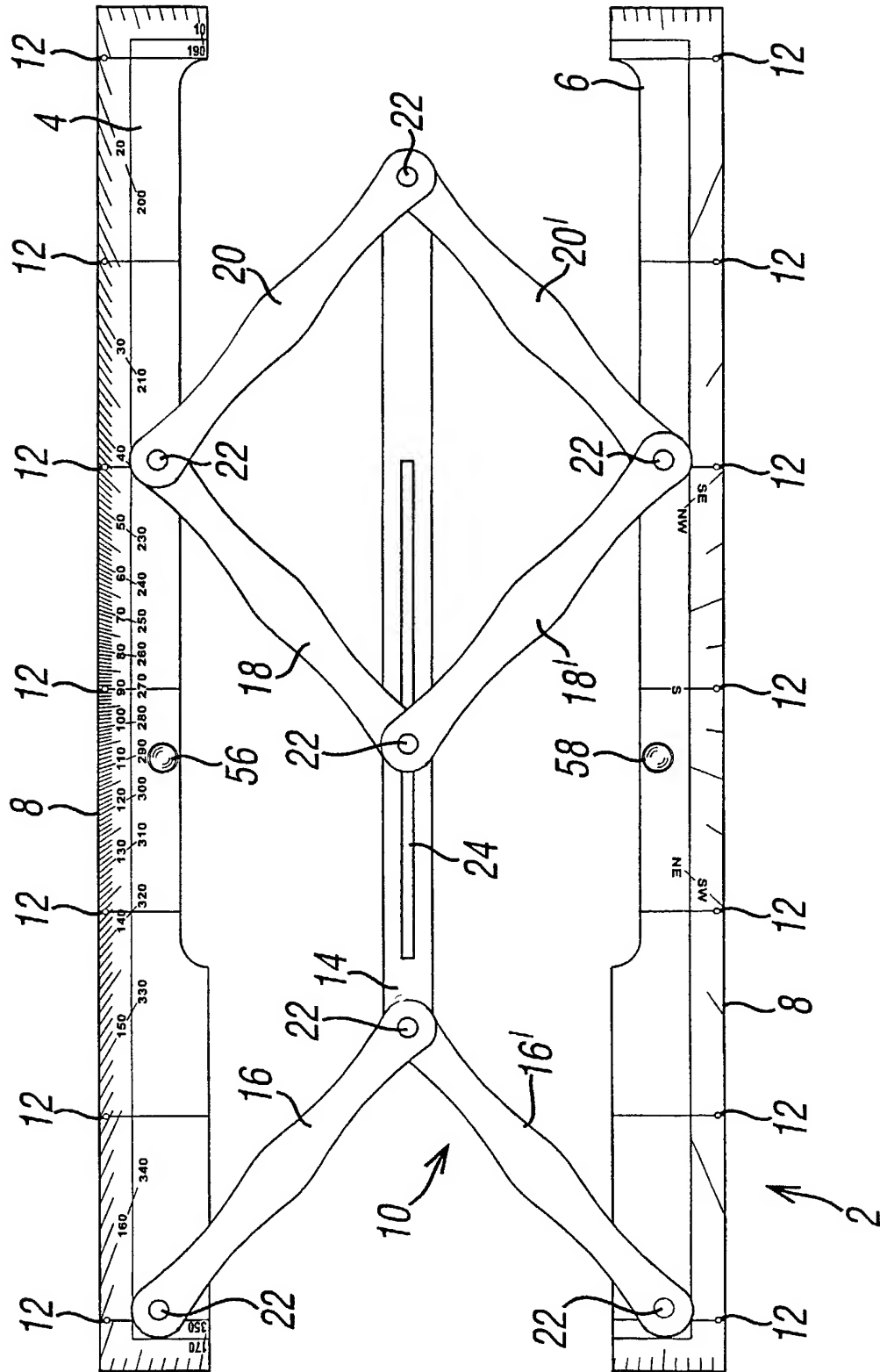


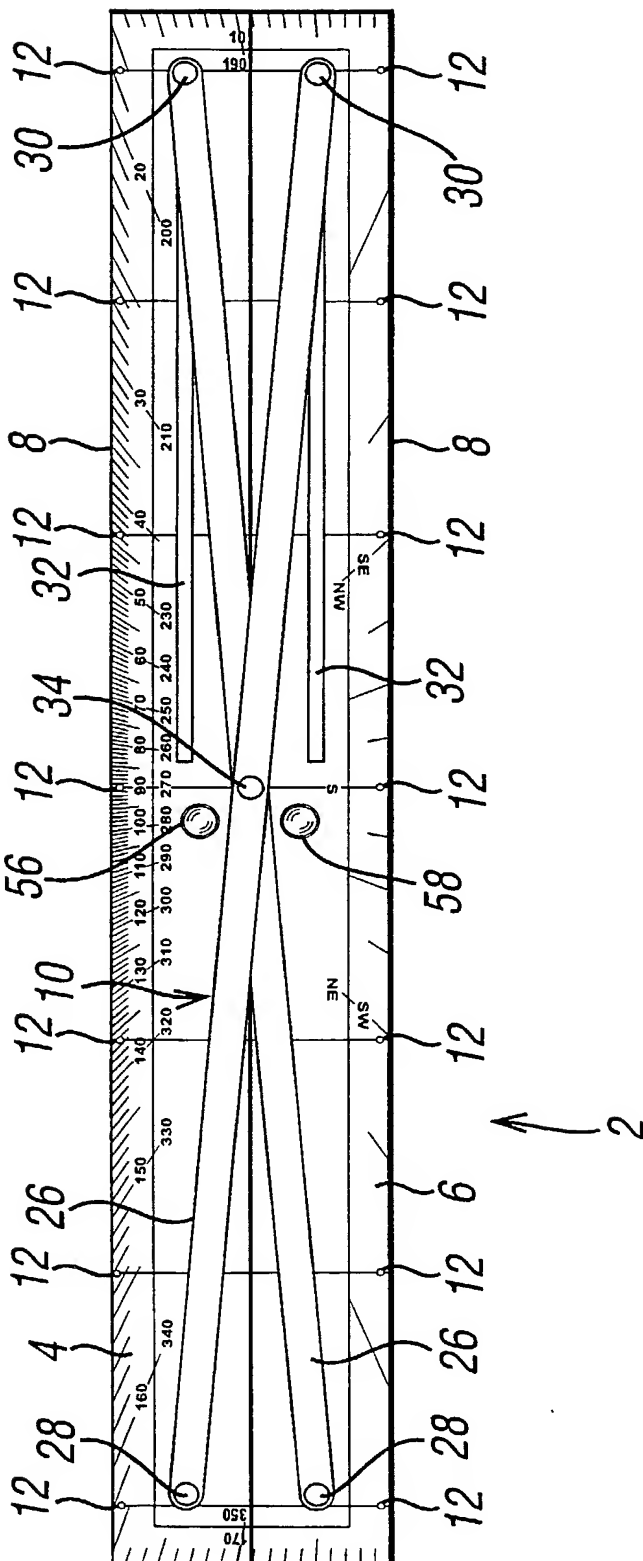
FIG. 3B

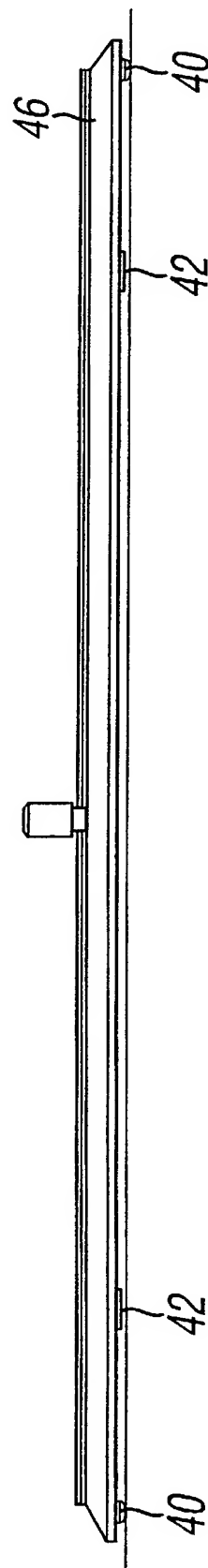
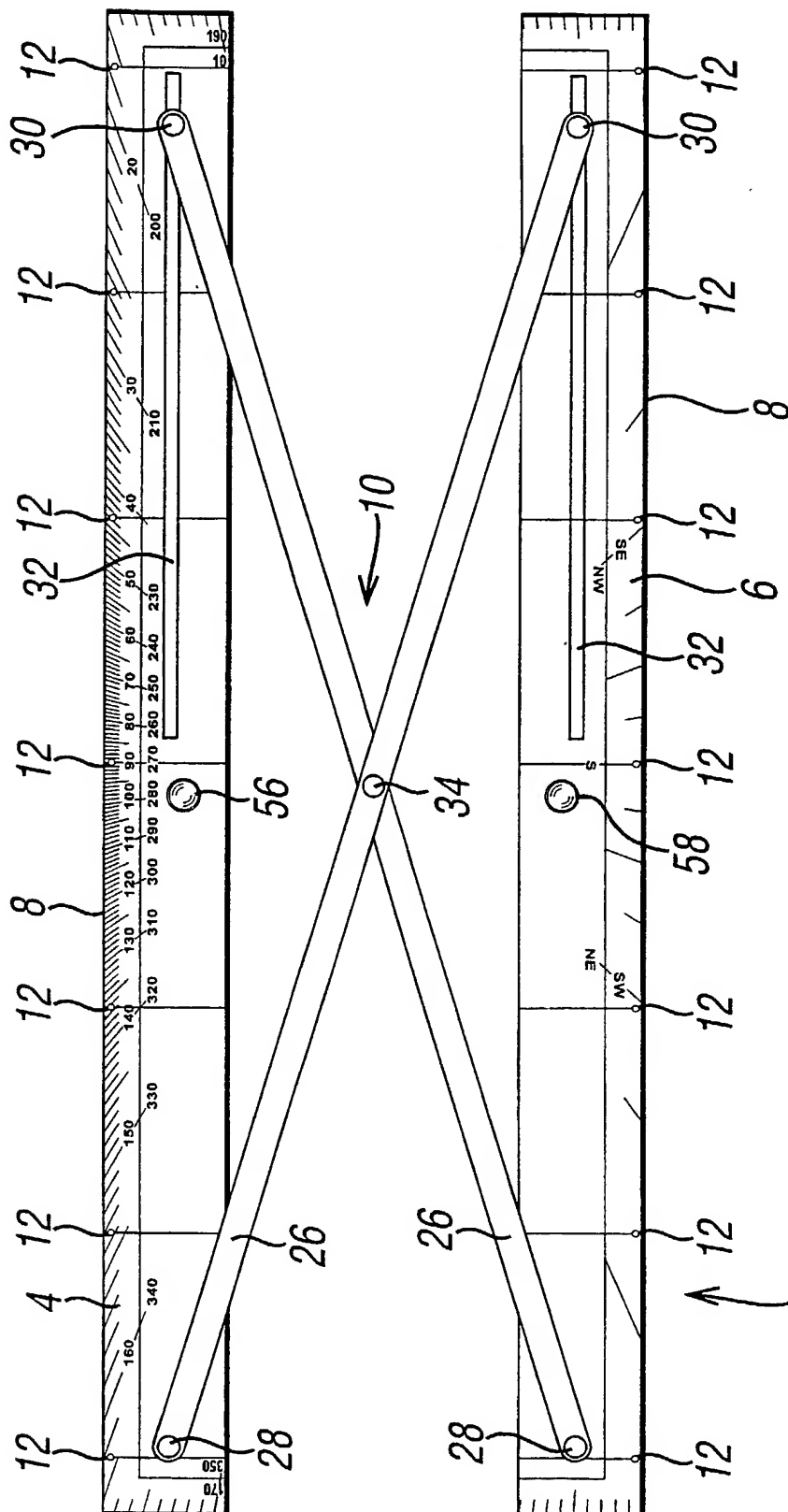
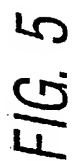


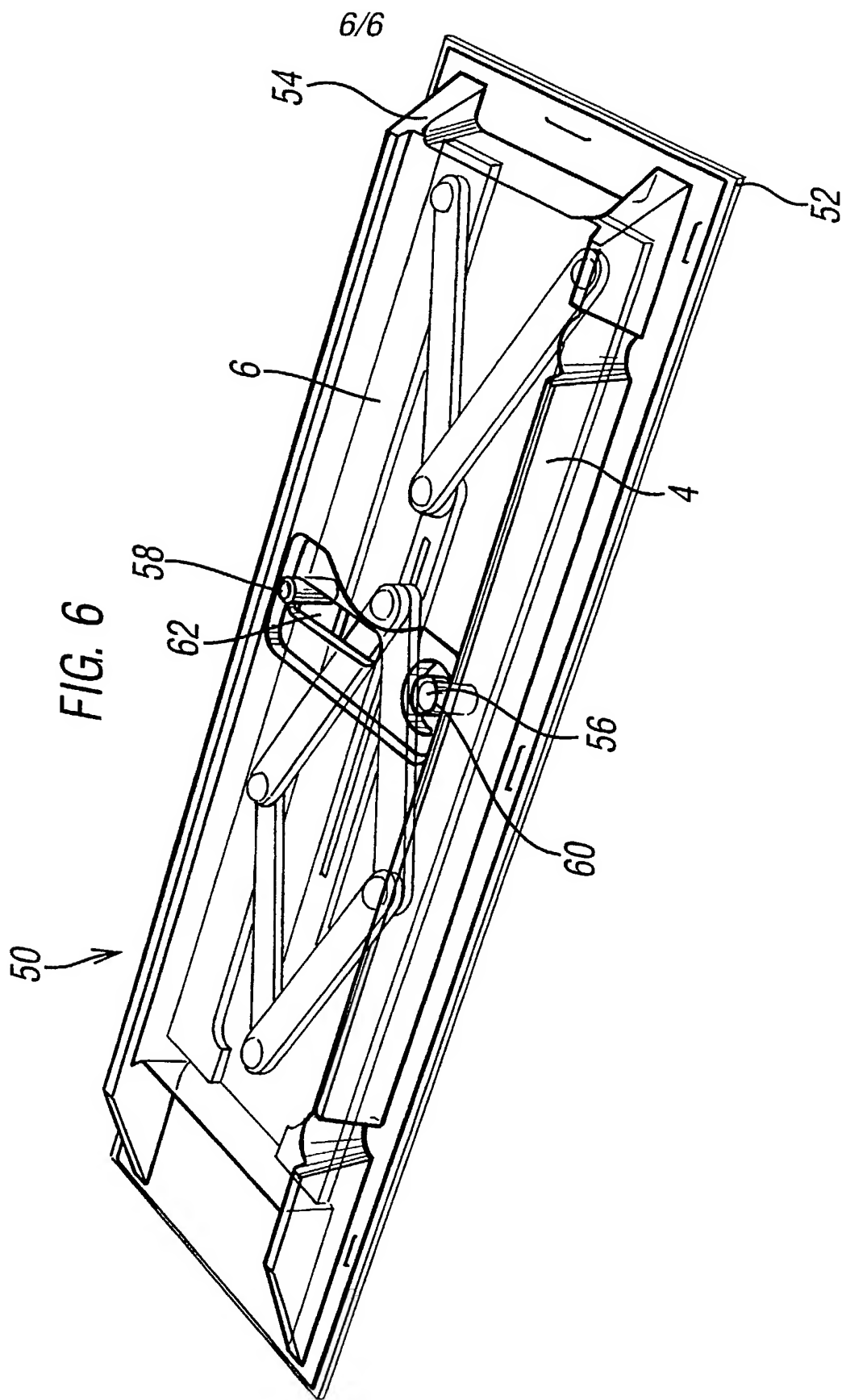
3/6

FIG. 3









DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

PARALLEL RULE

the specification of which:

[a] is attached hereto [b] was filed on *March 1, 02*
as Application Serial No. *10/070,499*
and was amended on

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, Section 1.56(a)

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119 of any foreign application(s) for patent or inventor's certificate listed below have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

PRIOR FOREIGN APPLICATIONS

British	9920664.1	1 st September 1999
(Number)	(Country)	(Date)

I hereby claim the benefit under Title 35, United States Code Section 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, Section 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application.

I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and to transact all business in the Patent Trademark Office connected therewith:

Michael Y. Epstein

Address all telephone calls to: 001 843 534 0840

Michael Y. Epstein, Esq.,
387 King St., Apt. A,
Charleston,
SC 29403,
United States

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 1 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full name of Sole or first inventor: ¹⁻⁶⁰ Michael HUMPHRIES

Inventors signature: M. Humphries

Date: 3rd MARCH 2002

Residence: 54 Cookham Road, Maidenhead, Berks, SL6 7HT, England. ENG

Country of Citizenship: England

Post Office Address: _____

